Wednesday July 23, 2003

Weekly Energy Status Report

1. Northwest Power Pool Status (WA, OR, ID, MT, WY, UT, No. NV, BC, AB)

- Power Pool peak load (Tuesday, 7/21): 49,473 MW
- Reserve margins were within comfortable ranges for Northwest Power Pool utilities.

2. Electricity, Petroleum and Natural Gas Prices

• Weekly Range at Mid-C:	$42.5-63.5 per MWh, Ave. = $51
• Approximate change from previous week	$+8 per MWh
• "Normal" price range, before 5/00	$20-$40 per MWh
• Petroleum, West Texas Intermediate:	$31.78 per barrel (year ago: $27.48)
• Seattle gasoline price (7/15)	$1.63 per gallon (year ago $1.50)
• Natural gas, Sumas Hub:	$4.35 per million British Thermal Units (year ago $2.75)
• Approximate change from last week.	Oil: +0.51 per barrel; Nat. gas: -0.15 MMBtu

3. California Electricity Situation

- CA ISO Alert Status
  - A stage 1 alert (7% reserve margin) was declared on May 28, 2003.
  - A stage 2 alert (5% reserve margin) was declared on July 10, 2002.
  - Most recent rotating blackouts: Tuesday, May 8, 2001

- Energy News Headlines from California and the Nation
  - Energy firms see hot market for super cold natural gas (Wall Street Journal, July 17)
  - BPA's risk of default grows GAO says (Tri-City Herald, July 18)
  - Hydrogen cars not needed experts say (Reuters, July 21)

4. River and Snowpack Information (Updated July12, 2003)

- Observed June stream flow at The Dalles: 87.2% of average
- Observed June precipitation above the Dalles: 50% of average
- Observed 2003 snow pack as of May 30 (final for 2003): 89% of average
- The latest forecast of Columbia River stream flows this January through July is 89.3 million acre feet, 83 percent of normal: National Weather Service Northwest River Forecast Center.

5. Energy Conservation Achievement (Updated Mar. 10, 2003)

- **State Agencies:** From January to December 2002 electrical usage was 7.6 % less and natural gas usage was 4.1% less compared to the same period in 2000.

6. Winter Load Loss/Reservoir Impacts/Fish (Updated April 21)

- Federal reservoir system storage: 46% full: Precipitation Oct. – to date, 93% of normal.
- Estimated winter (2002/03) load loss probability of 1%

7. Power Exchanged: (July 22, 2003)

- Average flow of power during the last 30 days

o California (exported to)	2,985 MW
o Canada (imported from)	111 MW
o Net power export:	2,874 MW

Energy Firms See Hot Market For Supercold Natural Gas

At 260 Degrees Below Zero, the Fuel Becomes a Liquid as Portable as Oil

Last summer, the docks in Brunei got a visit from a freezer the size of an aircraft carrier.

The holds of the Aries were lined with three feet of insulation: first, a layer of containers filled with perlite -- a lightweight rock often used in potting soil to retain moisture -- then a layer of polyurethane foam, best known as a cushioning in upholstered furniture.

All that padding was designed to keep the Aries's cargo at minus 260 degrees Fahrenheit. Inside was natural gas, frozen into liquid form.

This frosty fuel is poised for a boom that could transform the world's energy markets. Ordinarily, to ship natural gas, you need to build a pipeline from the producer to the purchaser. With liquefied natural gas, or LNG, the fuel can be shipped anywhere, as easily as oil. The LNG on the Aries, for example, ended up halfway around the world in Louisiana.

Oil is getting more expensive to produce, and many energy companies are sitting on vast, untapped deposits of natural gas. LNG offers the companies an easy way to ship that fuel around the globe, creating an international market for a commodity that has never had one before and potentially lowering sky-high prices for natural gas in the U.S. Even Federal Reserve Chairman Alan Greenspan told Congress recently that the nation needed to be doing more to bring in LNG.

Energy giants **BP** PLC, **Exxon Mobil** Corp. and **Royal Dutch/Shell** Group, which chartered the Aries, are all investing billions of dollars in plants to produce LNG and ships to transport it. All that construction is creating economies of scale that are driving down the cost of producing and shipping the fuel, making it even more attractive to producers.

"We have a significant amount of gas resources and markets that look like they need gas," says Peter J. Robertson, vice chairman of **ChevronTexaco** Corp., which plans to spend billions on special LNG receiving terminals off the coasts of Texas and California. "As you look into the future, [LNG] will be a bigger and bigger part of the world energy supply."

Already, the U.S. is seeing an LNG boom. In 2002, ships offloaded 229 billion cubic feet of LNG into the country, up nearly 170% from 86 billion cubic feet in 1998. Just the first three months of this year saw 80 billion cubic feet in imports, according to the U.S. Energy Department. Imports are projected to grow to 900 billion cubic feet by 2005, supplying 4% of U.S. natural-gas demand.

Energy companies have known how to make LNG for years, but there wasn't enough interest in the fuel to mass-produce it and thus achieve economies of scale. For the most part, the only buyers were Japan and Korea, which don't have large local supplies of natural gas.

Now several forces have come together to make LNG a more profitable proposition for energy companies. Over the past few years, natural gas rapidly has become the fuel of choice for power plants and many industries in the U.S. Companies were drawn to natural gas by its low cost and its environmental friendliness. Congress has pushed the power-generation industry to use gas. But lately supplies of the fuel have flattened in North America, forcing prices to roughly twice their traditional level: about $5 per million British thermal units, compared with the usual $2.50 or so.

To feed its need for natural gas, the U.S. has few options besides LNG. The U.S. has been importing natural gas through pipelines from Canada, but growing demand north of the border makes increased exports unlikely. A new pipeline to Alaska would ease supply problems, but that would take the better part of a decade to build.

Enter big oil companies, who see LNG as a way out of a difficult spot. Their cash balances are growing thanks to higher oil prices, but building crude-oil production through exploration has become more and more difficult. Many of the large deposits of oil that remain are in the hands of national companies or lie in politically turbulent areas, such as the Caspian Sea north of Iran.

"Oil has become more expensive to find. A number of areas where oil exists are politically complicated," says Steve Lowden, senior vice president of **Marathon Oil** Corp. By contrast, he says, "the cost of finding and developing gas is very competitive."

Indeed, many energy companies have access to huge natural-gas reserves in need of a market. The world is estimated to have enough natural-gas reserves to meet current U.S. demand for the next 2 1/2 centuries. Much of that lies untapped in regions, such as the Middle East, that don't need the fuel for their own consumption. In the past, companies drilling for oil were disappointed when they found natural gas, typically reinjecting the gas into the ground or simply burning it off. The industry burns off enough natural gas each year to supply France, Belgium and the Netherlands with all their energy needs.

Now energy companies are investing a total of $28 billion to $30 billion in LNG projects currently under construction, according to Andy Flower, an LNG consultant in London and former head of BP's global LNG activities. Another $100 billion in projects have been announced, but companies are waiting to see if the Asian-Pacific market, which will influence the economics of these projects, remains healthy enough to sustain demand. The global annual output of LNG will increase 32% to 7.6 trillion cubic feet by the time continuing construction is complete.

A quarter of the new output is in Qatar, where Exxon Mobil, the world's largest public oil company, has a 25% interest in two new cooling plants under construction. It plans to send natural gas to the U.S., to France and to what is planned to be the largest receiving terminal in the world, on Britain's western coast. "We expect LNG supplies to grow fourfold by 2020, largely due to advances in technology that allows us to profitably bring more remote gas resources to market as LNG," Chairman and Chief Executive Lee Raymond told analysts earlier this year.

In the U.S., a dozen efforts are under way to build or enlarge LNG receiving terminals. Three existing LNG terminals in Massachusetts, Louisiana and Georgia are under expansion and a fourth is being reopened in Maryland this summer. Marathon is racing to start construction on what it hopes will be the first West Coast terminal, located a few miles south of the border in Tijuana, Mexico. It hopes to trade access to its West Coast terminal for interest in Indonesian gas fields, adding to an international LNG portfolio that includes production in Equatorial Guinea. Last year, it bought rights to import LNG through a terminal in Georgia.

Three of the U.S. terminals were mothballed during the 1990s because imported LNG couldn't compete with the price of North American natural gas. As this equation reversed, the receiving terminals were reopened. There, the LNG is pumped off the tankers and sent through heated pipes, where the liquid gas expands and returns to its gaseous state before being sent into the pipeline grid.

If LNG use becomes widespread, it could link large and growing energy consumers such as the U.S., China, India and the European Union with vast natural-gas reserves in the Middle East and West Africa, as well as in less-obvious venues such as Australia, Malaysia and Norway.

This, in turn, could help steady the price of natural gas, which is currently subject to extraordinary price volatility because it can't be imported easily to make up for regional shortages. More LNG on the world market could thus ease spikes in heating costs, as well as in costs for industries that use natural gas heavily, such as chemical and fertilizer producers.

An expanded natural-gas market isn't likely to put a large dent in the sale of crude oil, which remains the principal fuel for transportation. But additional supplies of natural gas at stable prices could lessen upward pressure on oil prices. Some large industrial consumers, such as steel manufacturers, can use either oil or natural gas for energy. If oil prices rise, companies could switch more readily to natural gas, helping put a brake on rising oil prices.

U.S. natural-gas producers could be the biggest losers down the road, as more natural-gas imports come ashore. With natural gas more accessible in some countries than in the U.S., imports are likely to bring prices down, just as crude-oil imports have led to lower U.S. oil prices -- and fewer U.S. oil producers. The Aries's cargo, for example, sold in Louisiana for 74 cents less per million BTUs than natural gas produced locally.

R. Skip Horvath, president of the Natural Gas Supply Association, which represents North American natural-gas producers, says his group is in favor of increased LNG imports as a way to reduce price volatility. A more stable market, he says, will keep political heat off the industry; in the past month, both houses of Congress have held hearings about natural-gas pricing.

Another group, the Interstate Oil and Gas Compact Commission, which represents the governors of 30 producing states, cautions that increased LNG imports would make the U.S. more reliant on foreign-energy imports. Natural gas, however, is available in many different parts of the world, so the U.S. wouldn't be as reliant on imports from traditional oil powerhouses in the Organization of Petroleum Exporting Countries.

The prospect of a global LNG market already is prompting a big shift in priorities among energy companies.

BP is scrambling to secure new markets for natural gas as quickly as possible. Last year, BP was part of two long-term agreements to supply natural gas to China, where it is the only foreign company involved in building the first LNG-receiving terminal to serve the world's fastest-growing energy market.

It also signed short-term contacts to purchase natural gas from Qatar and Abu Dhabi, and bought three new LNG-transport vessels to exploit market opportunities wherever they might occur. BP's gas chief, Ralph Alexander, told analysts in February that "the key is to capture markets ahead of supply with a longer-term aim of allowing gas resources to move into the market with the same ease oil does today."

Meanwhile, Royal Dutch/Shell's world-wide natural-gas production has grown 23% during the past five years, while its oil production has grown less than 1%. Natural gas is now 42% of Shell's total production, up from 37% in 1998.

Growth in demand for "natural gas will outstrip that of oil for the foreseeable future," predicts Linda Cook, chief executive of Royal Dutch/Shell's Shell Gas & Power unit. The company believes that the world may consume more natural gas than oil by 2025. The International Energy Agency says natural gas now accounts for 23% of world energy use, while oil's share is 38%.

Some old gas projects are taking on a new glow. In 1984, geologists discovered a massive deposit of natural gas off Sakhalin Island in eastern Russia. The area has an estimated 17 trillion cubic feet of natural gas, enough to power all the residential gas furnaces and ovens in the U.S. for three years. But it wasn't until this May, in the face of growing U.S. demand, that Shell and its partners approved a $10 billion project to build two offshore platforms, pipelines and a liquefaction plant.

The cost of such projects is falling, thanks to increased competition among construction firms. Technological advances have also helped, including more efficient turbines to power refrigeration units and a new generation of pumps. For example, a new cooling plant in northwest Australia, funded by a group of six companies including Shell and ChevronTexaco, will be built for about $1 billion and will produce LNG for one-third the cost of the first plants built there in the late 1970s.

Vigorous competition among shipyards has also driven down the cost of the specialized tankers that haul LNG. A tanker that cost $280 million in the early 1990s now costs between $150 million and $175 million. There are currently 141 LNG tankers in operation, and 54 more are on order at shipyards, says Keith Bainbridge, a consultant with LNG Shipping Solutions of London, an international maritime broker.

The newer ships are also larger and can hold more of their cold cargo. They're also built to withstand a considerable collision, allaying fears that the tankers could be floating explosives. In November, a Navy nuclear submarine surfaced under the Norman Lady, an LNG tanker, in the western Mediterranean Sea. The Norman Lady sustained several hull punctures along its starboard side, according to a Pentagon spokeswoman, but didn't lose any cargo.

"LNG will not explode because it's not under pressure," says U.S. Coast Guard Lt. Commander Joseph Snowden. Natural gas, he explains, burns only when "in a proper gas-to-air ratio and that's a very narrow window."

BPA's risk of default grows, GAO says

By Les Blumenthal Herald Washington, D.C., bureau

WASHINGTON -- Congressional investigators say the risk of the Bonneville Power Administration defaulting on its debt to the U.S. Treasury has increased over the past several years as the federal power marketing agency's financial situation has deteriorated.

The General Accounting Office said Bonneville has paid too much for the outside electricity it needed to cover all its customer demands. Its report also says BPA's operational costs have mounted -- especially for protecting endangered salmon runs -- and the utilities it serves are starting to look elsewhere for power.

"The likelihood of greater risk to the Treasury seems to be coming to pass," GAO said.

The GAO report could provide the impetus for Congress to order a study of Bonneville's future even as the Bush administration raised the possibility the agency, which supplies 45 percent of the electricity in the Northwest, should be sold or privatized.

The House today is expected to approve an energy and water spending bill that directs the Department of Energy to conduct an independent review of Bonneville's "mission, management and financial condition."

Bonneville, which markets the low-cost electricity generated at federal dams on the Columbia and Snake rivers, is part of the Energy Department.

Taking note of the GAO report, the bill says "the net result is that Bonneville continues to operate at significant financial risk, which impacts both ratepayers in the region and taxpayers in the rest of the country."

If the Senate agrees, the Energy Department would be required to submit its report on Bonneville to Congress by the end of 2004, after the election.

Ed Mosey, a spokesman for Portland-based BPA, said every time the federal deficit grows there is talk of selling off the agency.

"The evidence will show it would be a mistake," Mosey said. "The federal system (BPA) is the driving engine of the Northwest's economy and privatization would add costs and increase rates."

Mosey said the GAO, which has long been critical of Bonneville, made some mistakes in its analysis and misinterpreted other factors that have created financial problems for Bonneville.

"It sounds like they waded into water over their heads," Mosey said.

While the GAO report notes Bonneville warned earlier this year there was a 74 percent chance it could miss a Treasury payment, Mosey said that was based on concerns the region was headed for a drought that could affect power production at the federal dams.

The fear of low-water conditions has eased and there is now 100 percent certainty Bonneville will make its Treasury payment this fall, Mosey said. The payments usually are between $700 million and $800 million.

Bonneville owes the Treasury $7.4 billion, money that was used to finance construction of the hydroelectric dams and the region's extensive electricity transmission grid. The agency has not missed a Treasury payment in more than 20 years.

Even so, the GAO said Bonneville's long-term risk of default is greater than it was five years ago because of its "higher costs and because of uncertainty surrounding both its role as electricity provider and its obligations to protect fish and wildlife."

"While BPA has taken steps to improve its financial condition and deal with its long-term challenges, the past such efforts have not entirely succeeded," the report says.

Hydrogen Cars Not Needed, U.S. Experts Say

WASHINGTON (Reuters) - Two U.S. energy experts cast more doubt on Friday on a push to develop hydrogen-powered cars as a means to cut air pollution and reduce oil imports.

Cheaper and faster ways already exist to achieve the same effect, including raising fuel efficiency and toughening environmental standards, David Keith and Alexander Farrell, wrote in Friday's issue of the journal Science.

"Hydrogen cars are a poor short-term strategy, and it's not even clear that they are a good idea in the long term," Farrell, assistant professor of energy and resources at the University of California, Berkeley, said in a statement.

"Because the prospects for hydrogen cars are so uncertain, we need to think carefully before we invest all this money and all this public effort in one area."

President Bush has proposed spending $1.5 billion over five years to spur development by 2020 of cars that run on hydrogen fuel cells in order to cut dependence on imported oil.

The European Commission has said it plans to spend close to $2.3 billion (2.1 billion euros) on hydrogen-related research over the next four years.

Hydrogen is present in water, oil, gas and coal. Supporters of a "hydrogen economy" regard it as a clean source of energy that would cut pollution and the carbon dioxide emissions some scientists link to global warming.

Farrell and Keith, associate professor of engineering and public policy at Carnegie Mellon University in Pittsburgh, noted that hydrogen is derived mostly from oil and coal, which produce substantial carbon dioxide.

They said better fuel efficiency, improvements to car technology and stricter environmental rules could reduce air pollution at less than 100th the cost of hydrogen cars and would be more effective for several decades.

"Automobile manufacturers don't need to invest in anything fancy. A wide number of technologies are already on the shelf," Farrell said. "The cost would be trivial compared to the changes needed to go to a hydrogen car."

Other scientists have also questioned the benefits of hydrogen fuel cells. Leading environmental groups have also criticized the U.S. government and Europe for failing to put renewable energy sources such as wind and solar power at the heart of their hydrogen policies.

Wednesday July 23, 2003

Natural gas futures edge down as the gas storage level for the winter of 2003/04 rises at record pace.